WHAT IS CLAIMED IS:

1. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a modulator modulating the suppressed multiplexed signal outputted from said amplitude controller to produce a predetermined modulated signal;

a multiplexer multiplexing the modulated signal outputted from said modulator and the detection signal outputted from said detector to produce a multiplexed signal;

an optical transmitter converting the multiplexed signal outputted from said multiplexer into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a separator separating the modulated signal and the detection signal from the electrical signal outputted from said optical receiver;

a demodulator demodulating the modulated signal outputted from said separator to output the suppressed multiplexed signal; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said separator, an amplitude of the suppressed multiplexed signal outputted from said demodulator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

2. The optical transmission system according to claim 1, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

3. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a modulator modulating the suppressed multiplexed signal outputted from said amplitude controller to produce a predetermined modulated signal;

a detection signal modulator modulating the detection signal outputted from said detector to produce a modulated detection signal;

a multiplexer multiplexing the modulated signal outputted from the modulator and the modulated detection signal outputted from said detection signal modulator to produce a multiplexed signal;

an optical transmitter converting the multiplexed signal outputted from said multiplexer into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a separator separating the modulated signal and the modulated detection signal from the electrical signal outputted from said optical receiver;

a demodulator demodulating the modulated signal outputted from said separator to output the suppressed multiplexed signal;

a detection signal demodulator demodulating the modulated detection signal outputted from said separator to output the detection signal; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said detection signal demodulator, an amplitude of the suppressed multiplexed signal outputted from said demodulator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

4. The optical transmission system according to claim 3, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

5. The optical transmission system according to claim 3, wherein

an entire or part of an occupied frequency band of the modulated detection signal outputted from said detection signal modulator is different from an occupied frequency band of the modulated signal multiplexed in said multiplexer.

6. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

a modulator, provided with said frequency-multiplexed signal and said detection signal, modulating the frequency-multiplexed signal with a carrier to produce a predetermined modulated signal and changing a predetermined parameter of the modulated signal by referring to the detection signal;

an optical transmitter converting the modulated signal outputted from said modulator into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a demodulator demodulating the electrical signal outputted from said optical receiver to output said frequency-multiplexed signal.

7. The optical transmission system according to claim 6, wherein

the predetermined parameter changed by said modulator is a carrier frequency of said modulated signal.

8. The optical transmission system according to claim 7, wherein

said modulator increases the carrier frequency of said modulated signal as an instantaneous amplitude of said frequency-multiplexed signal increases, and

said modulator decreases the carrier frequency of said modulated signal as the instantaneous amplitude of said frequency-multiplexed signal decreases.

9. The optical transmission system according to claim 6, wherein

the predetermined parameter changed by said modulator is frequency modulation efficiency of said modulated signal.

10. The optical transmission system according to claim 9, wherein

said modulator decreases the frequency modulation efficiency of said modulated signal as an instantaneous amplitude of said frequency-multiplexed signal increases, and

said modulator increases the frequency modulation efficiency of said modulated signal as the instantaneous amplitude of said frequency-multiplexed signal decreases.

11. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a multiplexer multiplexing the suppressed multiplexed signal outputted from said amplitude controller and the detection signal outputted from said detector to produce a multiplexed signal;

a modulator modulating the multiplexed signal outputted from said multiplexer to produce a predetermined modulated signal;

an optical transmitter converting the modulated signal outputted from said modulator into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a demodulator demodulating the electrical signal outputted from said optical receiver to produce a demodulated signal;

a separator separating the suppressed multiplexed signal and the detection signal from the demodulated signal outputted from said demodulator; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said separator, an amplitude of the suppressed multiplexed signal outputted from said separator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

12. The optical transmission system according to claim 11,

wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

13. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a phase adjuster adjusting a phase of the detection signal outputted from said detector to produce a phase-adjusted detection signal;

a multiplexer multiplexing the suppressed multiplexed signal outputted from said amplitude controller and the phase-adjusted detection signal outputted from said phase adjuster to produce a multiplexed signal;

a modulator modulating the multiplexed signal outputted from said multiplexer to produce a predetermined modulated signal;

an optical transmitter converting the modulated signal outputted from said modulator into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a demodulator demodulating the electrical signal outputted from said optical receiver;

a separator separating the suppressed multiplexed signal and the phase-adjusted detection signal from the electrical signal outputted from said demodulator;

a phase reproducer adjusting a phase of the phase-adjusted detection signal outputted from said separator to output the detection signal before the phase thereof is adjusted; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said phase reproducer, an amplitude of the suppressed multiplexed signal outputted from said separator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

14. The optical transmission system according to claim 13, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

15. The optical transmission system according to claim 13, wherein

said phase adjuster adjusts the phase of the detection signal so that instantaneous amplitude variations of the suppressed multiplexed signal and the detection signal multiplexed in said multiplexer are opposite in polarity.

16. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a detection signal modulator modulating the detection signal outputted from said detector to produce a modulated detection signal;

a multiplexer multiplexing the suppressed multiplexed signal outputted from said amplitude controller and the modulated detection signal outputted from said detection signal modulator to produce a multiplexed signal;

a modulator modulating the multiplexed signal outputted from said multiplexer to produce a predetermined modulated signal;

an optical transmitter converting the modulated signal outputted from said modulator into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a demodulator demodulating the electrical signal outputted from said optical receiver to produce a demodulated signal;

a separator separating the suppressed multiplexed signal and the modulated detection signal from the demodulated signal outputted from said demodulator;

a detection signal demodulator demodulating the modulated detection signal outputted from said separator to output the detection signal; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said detection signal demodulator, an amplitude of the suppressed multiplexed signal outputted from said separator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

17. The optical transmission system according to claim 16, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

18. The optical transmission system according to claim 16, wherein

an entire or part of an occupied frequency band of the modulated detection signal outputted from said detection signal modulator is different from an occupied frequency band of the suppressed multiplexed signal obtained in said multiplexer.

19. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a phase adjuster adjusting a phase of the detection signal outputted from said detector to produce a phase-adjusted detection signal;

a detection signal modulator modulating the phase-adjusted detection signal outputted from said phase adjuster to produce a modulated detection signal;

a multiplexer multiplexing the suppressed multiplexed signal outputted from said amplitude controller and the modulated detection signal outputted from said detection signal modulator to produce a multiplexed signal;

a modulator modulating the multiplexed signal to produce a predetermined modulated signal;

an optical transmitter converting the modulated signal outputted from said modulator into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a demodulator demodulating the electrical signal outputted from said optical receiver to produce a demodulated signal;

a separator separating the suppressed multiplexed signal and the modulated detection signal from the demodulated signal outputted from said demodulator;

a detection signal demodulator demodulating the modulated detection signal outputted from said separator to output the phase-adjusted detection signal before modulation;

a phase reproducer adjusting a phase of the phase-adjusted detection signal outputted from said detection signal demodulator to output the detection signal before phase adjustment; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said phase reproducer, an amplitude of the suppressed multiplexed signal outputted from said separator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

20. The optical transmission system according to claim 19, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

21. The optical transmission system according to claim 19, wherein

an entire or part of an occupied frequency band of the modulated detection signal outputted from said detection signal modulator is different from an occupied frequency band of the suppressed multiplexed signal obtained in said multiplexer.

22. The optical transmission system according to claim 19, wherein

said phase adjuster adjusts the phase of the detection signal so that instantaneous amplitude variations of the suppressed multiplexed signal and the modulated detection signal multiplexed in said multiplexer are opposite in polarity.

23. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a multiplexer multiplexing the suppressed multiplexed signal outputted from said amplitude controller and the detection signal outputted from said detector to produce a multiplexed signal;

an optical transmitter converting the multiplexed signal outputted from said multiplexer into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a separator separating the suppressed multiplexed signal and the detection signal from the electrical signal outputted from said optical receiver; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said separator, an amplitude of the suppressed multiplexed signal outputted from said separator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

24. The optical transmission system according to claim 23, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

25. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a phase adjuster adjusting a phase of the detection signal outputted from said detector to produce a phase-adjusted detection signal;

a multiplexer multiplexing the suppressed multiplexed signal outputted from said amplitude controller and the phase-adjusted detection signal outputted from said phase adjuster to produce a multiplexed signal;

an optical transmitter converting the multiplexed signal outputted from said multiplexer into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a separator separating the suppressed multiplexed signal and the phase-adjusted detection signal from the electrical signal outputted from said optical receiver;

a phase reproducer adjusting a phase of the phase-adjusted detection signal outputted from said separator to output the detection signal before phase adjustment; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said phase reproducer, an amplitude of the suppressed multiplexed signal outputted from said separator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

26. The optical transmission system according to claim 25, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

27. The optical transmission system according to claim 25, wherein

said phase adjuster adjusts the phase of the detection signal so that instantaneous amplitude variations of the suppressed multiplexed signal and the detection signal multiplexed in said multiplexer are opposite in polarity.

28. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a detection signal modulator modulating the detection signal outputted from said detector to produce a modulated detection signal;

a multiplexer multiplexing the suppressed multiplexed signal outputted from said amplitude controller and the modulated detection signal outputted from said detection signal modulator to produce a multiplexed signal;

an optical transmitter converting the multiplexed signal outputted from said multiplexer into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a separator separating the suppressed multiplexed signal and the modulated detection signal from the electrical signal outputted from said optical receiver;

a detection signal demodulator demodulating the modulated detection signal outputted from said separator to output the detection signal; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said detection signal demodulator, an amplitude of the suppressed multiplexed signal outputted from said separator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

29. The optical transmission system according to claim 28, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

30. The optical transmission system according to claim 28, wherein

an entire or part of an occupied frequency band of the modulated detection signal outputted from said detection signal modulator is different from an occupied frequency band of the suppressed multiplexed signal obtained in said multiplexer.

31. A system for optically transmitting a frequency-multiplexed signal with a plurality of signals frequency-multiplexed, comprising:

a detector, provided with the frequency-multiplexed signal, outputting a detection signal corresponding to an amplitude variation of the frequency-multiplexed signal;

an amplitude controller adjusting an amplitude of said frequency-multiplexed signal by referring to the detection signal outputted from said detector, and outputting a suppressed multiplexed signal, which is the frequency-multiplexed signal with an instantaneous amplitude variation suppressed;

a phase adjuster adjusting a phase of the detection signal outputted from said detector to produce a phase-adjusted detection signal;

a detection signal modulator modulating the phase-adjusted detection signal outputted from said phase adjuster to produce a modulated detection signal;

a multiplexer multiplexing the suppressed multiplexed signal outputted from said amplitude controller and the modulated detection signal outputted from said detection signal modulator to produce a multiplexed signal;

an optical transmitter converting the multiplexed signal outputted from said multiplexer into an optical signal;

an optical receiver converting the optical signal sent from said optical transmitter into an electrical signal;

a separator separating the suppressed multiplexed signal and the modulated detection signal from the electrical signal outputted from said optical receiver;

a detection signal demodulator demodulating the modulated detection signal outputted from said separator to output the phase-adjusted detection signal;

a phase reproducer adjusting a phase of the phase-adjusted detection signal outputted said detection signal demodulator to output the detection signal before phase adjustment; and

an amplitude adjuster adjusting, by referring to the detection signal outputted from said phase reproducer, an amplitude of the suppressed multiplexed signal outputted from said separator to output the frequency-multiplexed signal corresponding to the frequency-multiplexed signal provided to said detector.

32. The optical transmission system according to claim 31, wherein

said amplitude controller adjusts an instantaneous amplitude of said frequency-multiplexed signal to be held under a predetermined value.

33. The optical transmission system according to claim 31, wherein

an entire or part of an occupied frequency band of the modulated detection signal outputted from said detection signal modulator is different from an occupied frequency band of the suppressed multiplexed signal obtained in said multiplexer.

34. The optical transmission system according to claim 31, wherein

said phase adjuster adjusts the phase of the detection signal so that instantaneous amplitude variations of the suppressed multiplexed signal and the modulated detection signal multiplexed in said multiplexer are opposite in polarity.